

Sandia National Laboratories Component Manufacturing Development (CMD) Subprogram News Notes

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Electronic Production Control System

The CMD subprogram develops and deploys multi-application weapon component manufacturing capabilities needed to replace sunset technologies, upgrade existing technologies, and introduce new technologies that support the nuclear weapons stockpile. Sandia National Laboratories (SNL) is currently developing an Electronic Production Control System (EPCS) for ASIC production in the back end of line (BEOL) flow. *A pre-production version of EPCS has been released and is operating as intended. We are currently processing all ASIC products, including CVV validation ASICs.* The BEOL flow includes wafer probe, packaging, quality inspection, initial electrical test, dynamic burn-in, final electrical test, quality inspection, final visual inspection, radiation testing, SNL acceptance, DOE SSO acceptance, and qualification testing steps. EPCS will execute this production workflow (initiate, control, and electronically track each product); it will implement defect prevention strategies; it will create an electronic inventory control system that is accountable for all ASIC material from inception to delivery; it will electronically collect and store any and all required quality evidence and most of the electronic BEOL data; and it will create a management reporting module with production statistics and timelines. The defect prevention strategies include the use of 2D marks on our ASICs with 2D scanners so that there will be no manual entry of part numbers (scanners), will not allow testing the wrong parts in Test and Burn-in. Other defect prevention strategies will negate the possibility of neither using the wrong test or burn-in program for any part nor the use of BEOL machines or boards that are out of calibration. **In summary, EPCS is being implemented and it will greatly improve the product acceptance through full electronic data collection and quality control and defect prevention through bar codes, scanners, tracking training of personnel, and tracking tool availability.**
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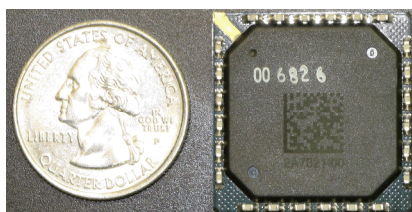


Figure 1: Sample 2D marking on ASICs. These will be read by scanners to eliminate mistakes in manual data entry.



Figure 2: Current Acceptance process requires large amounts of data that is then compiled, organized and presented in a 6" binder. We will now store data in corporate supported servers.



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